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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/899,410	07/05/2001	James O. Farmer	08286.105003	3294

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EXAMINER	
BELLO, AGUSTIN	

ART UNIT	PAPER NUMBER
2633	17

DATE MAILED: 03/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/899,410	FARMER ET AL.	
	Examiner	Art Unit	
	Agustin Bello	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-52* is/are rejected.

7)☒ Claim(s) *4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *10,11,13* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/20/03 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1, 2, 9, 11, 12, 14, 16, 17, 19-24, 31-35, 37, and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Lin (U.S. Patent No. 6,385,366)

Regarding Claims 1 and 21 Lin teaches an optical network system comprising: a data service hub (reference numeral 12 in Figure 1) ; at least one optical tap (reference numeral AN_{1A} in Figure 2) for dividing a downstream optical signal between one or more subscribers of the optical network system; at least one subscriber optical interface connected to the optical tap (reference numeral 19 in Figure 2) for receiving the downstream optical signal from and sending

upstream optical signals to the at least one optical tap; a laser transceiver node (reference numeral PH2 in Figure 2) disposed between the data service hub and the optical tap, for communicating optical signals to and from the data service hub and to and from the optical tap, and for apportioning bandwidth that is shared between groups of subscribers connected to a respective optical tap of the optical network system (column 5 lines 57-62, column 8 lines 65-67), and one or more optical waveguides connected between respective optical taps and the laser transceiver node (reference numeral LB1 in Figure 2), for carrying the upstream optical signals and the downstream optical signals (column 10 line 62), whereby the number of the waveguides is minimized (e.g. one fiber, column 8 lines 44) while optical bandwidth for subscribers is controllable by the laser transceiver node in response to subscriber demand (e.g. via the selective transmission of broadband channels to subscribers at the transceiver node in response to subscriber demand).

Regarding Claim 2, Lin teaches the optical network system of claim 1, wherein the laser transceiver node further comprises an optical tap routing device (as seen at the output of PH2 wherein optical signals are routed to a plurality of secondary hubs, SH, reference numeral 219 in Figure 5) for apportioning the bandwidth between subscribers of the optical network system.

Regarding Claim 9, Lin teaches that the distance between the transceiver node and the data service hub ranges from zero to eighty kilometers (e.g. transceiver node is connected to the data service hub).

Regarding Claims 11 and 37, Lin teaches that the laser transceiver node further comprises an optical tap routing device (reference numeral 219 in Figure 5) that allocates additional or reduced optical bandwidth to at least one subscriber optical interface relative to other subscriber

optical interfaces in the optical network system (e.g. subscribers who are not receiving broadband services on λ_{32} receive reduced bandwidth compared to those who do receive the broadband signal).

Regarding Claim 12, Lin teaches that the laser transceiver node comprises an optical tap routing device (reference numeral 219 in Figure 5) that manages upstream and downstream optical signal protocols (column 10 line 62).

Regarding Claims 14 and 39, Lin teaches the optical network system of claim 1, wherein data bit rates for the upstream and downstream optical signals are substantially symmetrical (column 10 line 62).

Regarding Claims 16, 17, 22, 23, and 34, Lin teaches that each optical tap comprises at least one optical splitter and further that optical taps can be cascaded or connected to other optical taps (column 8 lines 60-65)

Regarding Claim 19, Lin teaches that each subscriber optical interface comprises an analog optical receiver (inherent in that an analog optical signal λ_{AM} is transmitted from the headend to the subscriber), a digital optical receiver (inherent in the subscriber's ability to receive digital optical signals) , and a digital optical transmitter (inherent in the ability to transmit upstream optical signals from the subscriber).

Regarding Claim 20, Lin teaches multiple sets of waveguides that carry upstream and downstream information between the transceiver and data service hub (e.g. two fibers from headend 12 in Figure 1 to transceiver node PH2).

Regarding Claim 24, Lin teaches a method of communicating optical signals from a data service provider to at least one subscriber comprising the steps of propagating downstream

optical signals at a single wavelength from the data service provider (column 5 lines 35-42, e.g. $\lambda_{32,}$ column 8 lines 60-63), receiving the single wavelength downstream optical signals in a laser transceiver node from the data service provider (as seen in Figure 5), dividing the downstream signals between preassigned (e.g. dividing the single wavelength λ_{32} between the multiplexers in PH1, PH2, and PH3), appropriating bandwidth between subscribers in the laser transceiver node (column 5 lines 57-62), multiplexing the downstream signals at the preassigned multiplexers (as seen in Figure 5), propagating respective combined downstream optical signals at a single wavelength (column 5 lines 35-42, e.g. $\lambda_{32,}$ column 8 lines 60-63) to at least one subscriber (reference numeral HB1 in Figure 6) via at least one optical tap (reference numeral 270 in Figure 6) along at least one optical waveguide (reference numeral 234 in Figure 6).

Regarding Claim 31, Lin teaches he method of claim 24, further comprising the step of providing one of video, telephone, and internet services via the optical signals (column 7 lines 41-48)

Regarding Claim 32, Lin teaches the method of claim 24, further comprising the steps of: splitting combined downstream optical signals with at least one optical tap (reference numeral 270 in Figure 6); and propagating the split downstream optical signals (column 5 lines 35-42, e.g. $\lambda_{32,}$ column 8 lines 60-63) to at least one subscriber (reference numeral HB1 in Figure 6) via at least one optical tap (reference numeral 270 in Figure 6) along at least one optical waveguide (reference numeral 234 in Figure 6).

Regarding Claims 33 and 35, Lin teaches connecting between one and sixteen subscribers to a respective optical tap (column 5 lines 3-23).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 5, 7, 8, 10, 15, 18, 25-27, 29-30, 36, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin.

Regarding Claims 5 and 27, Lin differs from the claimed invention in that Lin fails to specifically teach that the laser transceiver accepts gigabit Ethernet optical signals from the data service hub and partitions the Ethernet optical signals into a predetermined number of groups. However, the use of gigabit Ethernet optical signals is well known in the art. Furthermore, one skilled in the art would clearly have recognized that since the transceiver node of Lin is capable of partitioning optical signals between a plurality of subscribers, the transceiver node of Lin would clearly have been able to partition the optical Ethernet signals into a predetermined number of groups. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have used gigabit Ethernet signals in the system of Lin, and further to have partitioned the signals into a predetermined number of groups.

Regarding Claims 7, 8, 29, and 30, Lin teaches the system of claim 1, but differs from the claimed invention in that Lin fails to specifically teach that the laser transceiver is mountable on a strand in an overhead plant environment or housed within a pedestal in an underground plant environment. However, one skilled in the art would clearly have recognized that it would have been possible to place the transceiver node in either environment without departing from the

scope of the invention of Lin. Placing a transceiver in such environments is well known in the art and would have been obvious to one skilled in the art at the time the invention was made.

Regarding Claims 10 and 36, Lin teaches the system of claim 1, wherein the transceiver node comprises at least one optical transmitter but differs from the claimed invention in that Lin fails to specifically teach that the laser transceiver node comprises at least one of a Fabry-Perot laser, a distributed feedback laser, and a vertical cavity surface emitting laser (VCSEL). However, Fabry-Perot laser, a distributed feedback laser, and a vertical cavity surface emitting laser (VCSEL) are all well known types of lasers that are readily available to one skilled in the art. Furthermore, one skilled in the art would clearly have recognized that it would have been possible to incorporate any of the types of laser claimed by the applicant. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have chosen the laser in the transceiver node to be one of a Fabry-Perot laser, a distributed feedback laser, and a vertical cavity surface emitting laser (VCSEL).

Regarding Claims 15 and 40, Lin differs from the claimed invention in that Lin fails to specifically teach that the optical waveguides are capable of handling rates up to 450 Mbps. However, it is very well known in the art that fibers are capable of handling a wide range of transmission rates (e.g. OC-192) including 450 Mbps. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have included optical waveguides that were capable of handling transmission rates up to 450 Mbps.

Regarding Claims 18 and 26, Lin teaches that each optical tap propagates upstream and downstream optical signals in addition to downstream RF modulated optical signals (e.g. λ_{AM} in Figure 7)

Regarding Claims 25, Lin fails to specifically teach that the subscribers are assigned to the respective individual multiplexers. However, Lin teaches that a plurality of subscribers are assigned to a multiplexer. One skilled in the art would clearly have recognized that in an expanded network of Lin, a plurality of subscribers would have been assigned to a plurality of multiplexers, each subscriber assigned to a respective multiplexer. Furthermore, duplication of the essential working parts of an invention does not constitute patentable material *St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.* It would have been obvious to one skilled in the art at the time the invention was made that if the network of Lin were expanded to include a plurality of transceiver nodes and a plurality of subscriber sites, then each of the subscribers would have been assigned to respective multiplexers.

6. Claims 3, 41, and 43-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Bears (U.S. Patent No. 5,325,223).

Regarding Claim 3, Lin teaches the optical network system of claim 1, wherein the laser transceiver comprises at least one multiplexer (reference numeral 215 in Figure 5) coupled to an optical tap routing device (reference numeral 219 in Figure 5); at least one optical transmitter connected to the at least one multiplexer (e.g. transmitter in Primary Hub 212 of Figure 5), for transmitting downstream optical signals received from the data service hub to at least one subscriber optical interface of the optical network system. Lin differs from the claimed invention in that in the Lin fails to specifically teach a receiver connected to the multiplexer for receiving upstream optical signals from the subscriber optical interface. However, Lin does teach that the system is a bidirectional communication system (column 10 line 62). One skilled in the art would clearly have recognized that it would have been necessary to use a receiver in

the transceiver node in order to be able to receive the signals transceiver upstream from the subscribers. One skilled in the art would also have recognized that a logical place for placing the receiver would have been connected to the multiplexer along side the transmitters in the transceiver node of Lin. Bears, in the same field of endeavor, teaches it is well known in the art to include a receiver connected to a multiplexer for the reception of upstream signals transmitted from the subscribers (reference numeral 56, 60 in Figure 4). One skilled in the art would have been motivated to include a receiver in the transceiver node of Lin in order to have the ability to receive communication signals transmitted from the subscribers to the headend. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have connected an optical receiver to the multiplexer of the transceiver node of Lin in order to receiver signals transmitted from the subscribers.

Regarding Claim 41, Lin teaches a method of communication comprising propagating upstream optical signals originating from at least one subscriber to at least one optical tap (column 10 line 62), receiving the upstream optical signals at a laser transceiver node (reference numeral 212 in Figure 5), apportioning bandwidth for at least one subscriber in the laser transceiver node (column 5 lines 57-62, column 8 lines 65-67), propagating the upstream signals to the data service provider (inherent in the upstream communication). Lin differs from the claimed invention in that Lin fails to specifically teach converting the upstream optical signals to electrical signals at the laser transceiver node, and converting and combining the upstream electrical signals into optical signals to be transmitted to the data service provider. However, Bears, in the same field of endeavor teaches it is well known in the art to use a transceiver node wherein upstream signals are converted to electrical signals (reference numeral 56 in Figure 4),

combined (reference numeral 60 in Figure 4), converted to optical signals (reference numeral 50 in Figure 4), and propagated to a data service provider (reference numeral 10 in Figure 2). One skilled in the art would have been motivated to include such a transceiver in order to reduce the number of fibers needed to propagate upstream signals to the data service provider. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have used a transceiver node which included a means for converting an upstream signal, combining means, and a second conversion means.

Regarding Claims 43 and 44, Lin teaches the system of claim 1, but differs from the claimed invention in that Lin fails to specifically teach that the laser transceiver is mountable on a strand in an overhead plant environment or housed within a pedestal in an underground plant environment. However, one skilled in the art would clearly have recognized that it would have been possible to place the transceiver node in either environment without departing from the scope of the invention of Lin. Placing a transceiver in such environments is well known in the art and would have been obvious to one skilled in the art at the time the invention was made.

Regarding Claim 45, Lin teaches he method of claim 24, further comprising the step of providing one of video, telephone, and internet services via the optical signals (column 7 lines 41-48)

Regarding Claim 46, Lin teaches the method of claim 24, further comprising the steps of: splitting combined downstream optical signals with at least one optical tap (reference numeral 270 in Figure 6); and propagating the split downstream optical signals (column 5 lines 35-42, e.g. $\lambda_{32,}$ column 8 lines 60-63) to at least one subscriber (reference numeral HB1 in Figure 6) via

at least one optical tap (reference numeral 270 in Figure 6) along at least one optical waveguide (reference numeral 234 in Figure 6).

Regarding Claim 47, Lin teaches connecting between one and sixteen subscribers to a respective optical tap (column 5 lines 3-23).

Regarding Claim 48, Lin differs from the claimed invention in that Lin fails to specifically teach that the transceiver node is positioned near the customer premises. However, one skilled in the art would clearly have recognized that it would have been possible to position the transceiver node of Lin in any of a variety of positions, including near the customer premises. One skilled in the art would have been motivated to place the transceiver node near the customer premises in order to reduce the length of fiber needed to reach the customer premises from the transceiver node. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have placed the transceiver node near the customer premises.

Regarding Claim 49 Lin teaches that each optical tap comprises at least one optical splitter and further that optical taps can be cascaded or connected to other optical taps (column 8 lines 60-65)

Regarding Claim 50, Lin fails to specifically teach that the subscribers are assigned to the respective individual multiplexers. However, Lin teaches that a plurality of subscribers are assigned to a multiplexer. One skilled in the art would clearly have recognized that in an expanded network of Lin, a plurality of subscribers would have been assigned to a plurality of multiplexers, each subscriber assigned to a respective multiplexer. Furthermore, duplication of the essential working parts of an invention does not constitute patentable material *St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.* It would have been obvious to one skilled in the art at the

time the invention was made that if the network of Lin were expanded to include a plurality of transceiver nodes and a plurality of subscriber sites, then each of the subscribers would have been assigned to respective multiplexers.

Regarding Claim 51, Lin teaches the optical network system of claim 1, wherein data bit rates for the upstream and downstream optical signals are substantially symmetrical (column 10 line 62).

Regarding Claim 52, Lin differs from the claimed invention in that Lin fails to specifically teach that the optical waveguides are capable of handling rates up to 450 Mbps. However, it is very well known in the art that fibers are capable of handling a wide range of transmission rates (e.g. OC-192) including 450 Mbps. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have included optical waveguides that were capable of handling transmission rates up to 450 Mbps.

7. Claims 6, 28, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Bears and Faulkner (U.S. Patent No. 4,975,899).

Regarding Claims 6, 28, and 42, Lin teaches the system of claim 1, but differs from the claimed invention in that Lin fails to specifically teach that the laser transceiver node comprises passive cooling devices in order to operate in a temperature range between -40 degrees Celsius to 60 degrees Celsius. However, the use of such passive cooling devices to maintain the operation of optical components within a certain temperature range are extremely well known in the art and would have been obvious to one skilled in the art. For example Faulkner teaches that heat sinks are used to keep transmitter system cool (column 1 lines 8-16). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use passive cooling

devices such as the heat sink taught by Faulkner in order to keep the transmitter system of Pangrac within the temperature range claimed by the applicant.

8. Claims 13 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Williams (U.S. Patent No. 5,880,864).

Regarding Claims 13 and 38, Pangrac teaches the limitations of claim 11, but differs from the claimed invention in that Pangrac fails to specifically teach that the protocol for transmission of signals is time division multiple access. However, one skilled in the art would clearly have recognized that it would have been possible to use any of the well known protocols for data transmission including TDMA. Williams, in the same field of endeavor, teaches that it is well known in the art to use a time division protocol to transmit data (column 13 lines 46-65). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have used TDMA protocol to transmit information in the system of Lin as taught by Williams.

Allowable Subject Matter

9. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Beveridge, BeAbbud, Mahony, Ortel, Bears, and Atlas for teaching bandwidth allocation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

AB
March 24, 2003

Leslie Pascal

LESLIE PASCAL
PRIMARY EXAMINER